

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
31 May 2001 (31.05.2001)

PCT

(10) International Publication Number  
WO 01/39023 A2

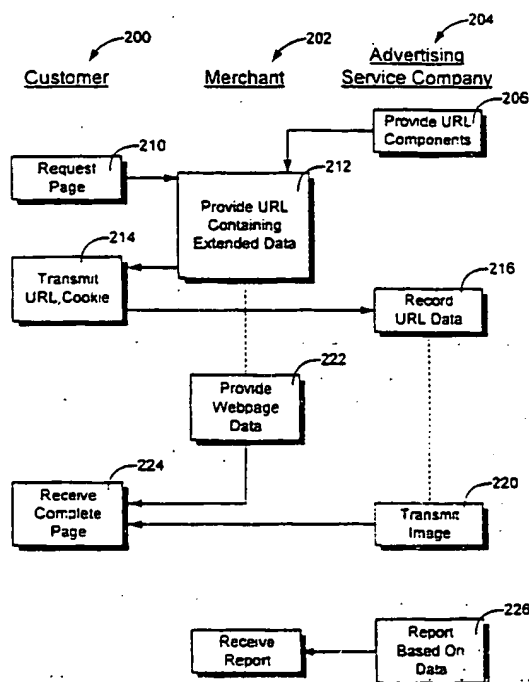
- (51) International Patent Classification: G06F 17/00 (74) Agents: LAWRENZ, Steven, D. et al.: Perkins Coie LLP, P.O. Box 1247, Seattle, WA 98111-1247 (US).
- (21) International Application Number: PCT/US00/32244
- (22) International Filing Date: 22 November 2000 (22.11.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/166,950 22 November 1999 (22.11.1999) US  
09/592,766 13 June 2000 (13.06.2000) US
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
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Published:

Without international search report and to be republished upon receipt of that report.

[Continued on next page]

(54) Title: METHOD AND FACILITY FOR CAPTURING BEHAVIORAL AND PROFILE DATA DURING A CUSTOMER VISIT TO A WEB SITE



WO 01/39023 A2

(57) Abstract: A method of recording data about a commercial transaction with a merchant includes transmitting a URL containing selected data and empty fields to a merchant. After a transaction is made and extended data gathered and added to the URL, the URL is received, and the extended data is stored. A data element may be transmitted in response to receiving the URL, and a cookie may be included with the extended data.



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## METHOD AND FACILITY FOR CAPTURING BEHAVIORAL AND PROFILE DATA DURING A CUSTOMER VISIT TO A WEB SITE

### FIELD OF THE INVENTION

The present invention is directed to Internet advertising techniques, and more particularly to recording of transactional data from commercial activities.

### BACKGROUND AND SUMMARY OF THE INVENTION

As computer use, and particularly the use of the World Wide Web, becomes more and more prevalent, the volumes of Internet advertising presented grow larger and larger. As the advertising industry continues to grow, the need to analyze the effectiveness of Internet advertising placements becomes more important.

Existing systems enable a merchant to collect certain limited data about customer visits to the merchant's web site by using "action tags" placed on the merchant web site by an advertising service company. The action tag contains a URL address at the advertising company that causes the customer's computer to connect to the advertising company's computer to retrieve a file. The file happens to be of no importance to the user, and is simply a means for the merchant to cause the retrieval to occur. Typically, the file is a one-pixel transparent graphic image that is not seen by the customer, which does not affect viewing of the merchant web page, and which has minimal size to avoid wasting resources.

After the action tag leads the customer's computer to connect with the advertising service company's computer, the advertising computer requires the customer to transmit a "cookie" in order to receive the requested file. This cookie is a file which contains a code that uniquely identifies the customer's computer, and is stored by the advertising computer

along with other information. Because the advertising service company does not know the identity of the person or address associated with the cookie, the anonymity of the customer is preserved, and data generated only indicates that a particular customer visited certain pages, without any means to contact the customer unless the contact information was volunteered by the customer on an "opt-in" basis.

Other information stored by the advertising service company may include the time the file request was made, and which page of which merchant was visited. Visiting multiple pages having action tags, and/or multiple visits to a single page, will cause multiple action tag records to be generated. This page and merchant information may be stored in the URL on the page in extra fields that are read by the advertising computer. The advertising service company may then process information from a multitude of visits to the merchant, generating a report that may sort the information by customer, based on multiple hits associated with each cookie, or may process the data to provide information such as the number of visits to certain important pages of the site (e.g., entry page, particular product description pages, order placement page, confirmation page) to know which percentage of visitors progressed to different steps in the ordering process, or were interested in particular products.

While effective for limited data gathering, the existing implementation of action tags has certain important limitation. While it may be known that a customer reached an order confirmation or "thank you" page and that an order was placed, there is no way to know anything about the order. Such knowledge would permit the evaluation of an advertising campaign or a web site design to know for example what stimulates large or high profit orders. Further, the merchant does not even know which customers made purchases, making it impossible to direct specialized promotions based on the automatically-collected action tag data, even to those customers who request such promotions. Also, there is no way to learn about the latency or delay between a customer selecting a page and the

time the action tag data is received. This would permit useful knowledge about the speed of connections, and orders potentially being lost due to delays or poor web site design, but is not possible in existing systems.

The present invention overcomes the limitations of the prior art by providing a method of recording data about a commercial transaction with a merchant. The method includes transmitting a URL containing selected data and empty fields to a merchant. After a transaction is made and extended data gathered and added to the URL, the URL is received, and the extended data is stored. A data element may be transmitted in response to receiving the URL, and a cookie may be included with the extended data. The URL is trafficked to merchant not as part of the page request process, but rather when the page is authored. The URL is dynamically built upon the page request, and when the page is loaded, the URL forms a request for the transparent image from the ad server. The cookie is sent along with the request. When the request is received by the ad server, the ad server logs the URL sent with the request (with the embedded "extended data") along with the unique user identifier stored in the cookie.

A software facility for collecting and analyzing profile information relating to customer visits to a web site, such as an advertiser's web site, is provided. In accordance with the facility, special "action tags" are added to the HTML content of significant web pages on the advertiser's web site, such as an order confirmation page. Each action tag is an HTML image tag coded to retrieve a one-pixel transparent image from a particular URL within the domain of a web server operated by an advertising service, upon which the facility preferably executes. The URL is composed dynamically by the advertiser's computer system in a way that incorporates information about the action taking place between the advertiser's web site and the current customer visiting the tagged web page.

When a web page containing an action tag is received from the advertiser's web server by the customer's computer system, the customer's computer system sends an HTTP request to the advertising service's web

server for the URL contained in the action tag. This HTTP request includes a unique identifier contained in a cookie stored persistently on the customer's computer system that uniquely identifies the customer's computer system to the advertising service. When the advertising service's web server receives the HTTP request, it extracts the extended data from the URL, and stores the extended data in a log entry along with the customer's cookie. The facility correlates such log rows created by action tags with additional log entries reflecting advertising messages presented on the advertiser's behalf on one of a variety of Internet publishers that sell advertising space. As these entries identify the customers that saw their advertising messages using the customer's cookie, they can be correlated with the action tag log rows to determine, for each customer that encountered an action tag, whether and where the customer saw advertising messages for the advertiser.

By correlating the data in this manner, the facility can assess the effectiveness of advertising done on behalf of the advertiser in terms of such variables as the identity of the particular advertising message and the Internet publisher on which the advertising message was presented. Moreover, the extended data stored for each action tag encountered can be used by the facility to further illuminate the effect of presenting the advertising messages to the customer, by, for example, showing the dollar amount of each order placed by a customer that saw particular advertising messages for the advertiser. Other pieces of extended data may be included to indicate preferences shown by the customer, to correlate information gathered in this manner with additional information about the customer provided by the advertiser, and to eliminate spurious data produced by unusual navigation routes taken through the advertiser's site. The facility preferably also incorporates the received extended data into a profile maintained for the customer.

Accordingly, a facility for capturing behavioral and profile data during a customer visit to a web site would have significant utility.

## BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a high-level block diagram showing the environment in which the facility preferably operates.

Figure 2 is a schematic block diagram showing the system and  
5 method of operation according to a preferred embodiment of the invention.

## DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

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25 web server receives the HTTP request, it extracts the extended data from the URL, and stores the extended data in a log entry along with the customer's cookie. The facility correlates such log rows created by action tags with additional log entries reflecting advertising messages presented on the advertiser's behalf on one of a variety of Internet publishers that sell

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While the facility provides certain specialized benefits when used in conjunction with an advertiser's web site, those skilled in the art will appreciate that the facility may be gainfully used to capture behavioral and profile data during a visit to web sites of different sorts.

Figure 1 is a high-level block diagram showing the environment in which the facility preferably operates. The diagram shows a number of Internet customer computer systems 101-104. An Internet customer preferably uses one such Internet customer computer system to connect, via the Internet 120, to an Internet publisher computer system, such as Internet publisher computer systems 131 and 132, to retrieve and display a Web page.



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In cases where an Internet advertiser, through the Internet advertising service, has purchased advertising space on the Web page provided to the Internet customer computer system by the Internet publisher computer system, the Web page contains a reference to a URL in the domain of the Internet advertising service company computer system 140. When a customer computer system receives a Web page that contains such a reference, the Internet customer computer systems sends a request to the Internet advertising service computer system to return data comprising an advertising message, such as a banner advertising message. When the Internet advertising service computer system receives such a request, it selects an advertising message to transmit to the Internet customer computer system in response the request, and either itself transmits the selected advertising message or redirects the request containing an identification of the selected advertising message to an Internet content distributor computer system, such as Internet content distributor computer systems 151 and 152. When the Internet customer computer system receives the selected advertising message, the Internet customer computer system displays it within the Web page.

The displayed advertising message preferably includes one or more links to Web pages of the Internet advertiser's Web site. When the Internet customer selects one of these links in the advertising message, the Internet customer computer system de-references the link to retrieve the Web page from the appropriate Internet advertiser computer system, such as Internet advertiser computer system 161 or 162. In visiting the Internet advertiser's Web site, the Internet customer may traverse several pages, and may take such actions as purchasing an item or bidding in an auction. Revenue from such actions typically finances, and is often the motivation for, the Internet advertiser's Internet advertising.

The Internet advertising service computer system 140 preferably includes one or more central processing units (CPUs) 141 for executing computer programs such as the facility, a computer memory 142

for storing programs and data, and a computer-readable media drive 143, such as a CD-ROM drive, for reading programs and data stored on a computer-readable medium.

While preferred embodiments are described in terms of the environment described above, those skilled in the art will appreciate that the facility may be implemented in a variety of other environments, including a single, monolithic computer system, as well as various other combinations of computer systems or similar devices.

While the various extended data items that may be used by the facility is practically unlimited, an exemplary list of extended data items appears below in Table 1.

1.	customer identifier
2.	merchant identifier
3.	session identifier
4.	order identifier
5.	order amount
6.	order type
7.	number of items ordered
8.	item numbers of items ordered
9.	color of items ordered
10.	size of items ordered

TABLE 1

A description of the exact nature of the extended definitions shown in Table 1, as well as their use by the facility follows.

#### 1. Customer Identifier

The customer identifier extended data item is a customer identifier used by the advertiser to identify the customer. By sending the customer identifier as part of the action tag, the advertiser enables the advertising service to correlate information about the customer collected by the advertising service and identified by the customer's cookie with information about the customer received from the advertiser, identified by

the advertiser's identifier for the customer. As an example, purchases history information or demographic information collected by the advertiser for the customer or may be provided to the facility and correlated with browsing behavior information collected by the facility. Inclusion of the customer identifier extended data item in the action tag further allows the advertising service to correlate multiple cookies associated with the same customer, such as different cookies stored on different computer systems used by the customer, or such as multiple cookies stored sequentially on the same computer system, each after the preceding cookie has expired or been purged.

## 2. Merchant Identifier

Where the advertiser hosts multiple merchants, the merchant identifier extended data item identifies the particular merchant at the advertiser's web site that the customer visited or ordered from. This extended data item enables the advertising service to analyze the effectiveness of advertising with respect to individual merchants hosted by the advertiser.

## 3. Session Identifier

The session identifier extended data item identifies a browsing session of the customer, preferably with a globally unique identifier ("GUID") generated on the customer's computer system. This extended data item enables the advertising service to associate the various observed actions taken by the customer during a single browsing session.

## 4. Order Identifier

The order identifier extended data item is an identifier that the advertiser uses to uniquely identify an order placed by the customer. The order identifier extended data item enables the advertising service to correlate information that it collects about an order with additional information provided by the advertiser about the order. Further, because order identifiers are unique between different orders, they enable the advertising service to identify and disregard redundant action tag log entries

-- multiple action tag log entries resulting from the same order, generated when the customer refreshes the tagged advertiser web page, or when the customer leave and returns to the tagged advertiser web page.

5. Order Amount

5 The order amount extended data item indicates the dollar amount of the order placed by the customer. The order amount extended data item enables the advertising service to determine the return on investment for particular advertising placement by aggregating the order amounts for action tag log entries whose cookies indicate that they saw  
10 particular advertising messages for the advertiser.

6. Order Type

Where the advertiser permits customers to place different types of orders, the order type extended data item indicates the particular type of an order placed by the customer. The order type extended data item enables  
15 the facility to analyze the effectiveness of advertising placement with respect to the type of orders they produce.

7. Quantity of Items Ordered

The number of items ordered extended data item indicates the total number of items included in the order placed by the customer. In a  
20 manner similar to the order amount extended data item, the number of items ordered extended data item enables the advertising service to analyze the effectiveness of particular advertising placements, as larger numbers of items ordered generally correspond to larger advertiser profits.

8. Item ID Numbers of Items Ordered

25 The item number (e.g., SKU numbers) of items ordered extended data item constitutes a list of the item numbers assigned by the advertiser to the items ordered in the order placed by the customer. The item numbers of items ordered extended data item enables the advertising service to analyze the effectiveness of particular advertising placements with respect  
30 to selling particular items.

### 9. Color of Items Ordered

The color of items ordered extended data item identifies the color of items ordered and enables the advertising service to analyze the effectiveness of particular advertising placements, with respect to selling items of a certain color.

### 10. Size of Items Ordered

For orders that include sized items, the size of items ordered extended data item indicates their size. For example, for an order that includes a pair of pants, the size of items order extended data item preferably indicates the waist and inseam measurements of ordered pair of pants. The size of items ordered extended data item enables the advertising service to analyze the effectiveness of particular advertising placements at selling products of a certain size, and to target future advertising placements for products of a similar size.

While many of the discussed extended data items relate to an order placed by a customer, various other extended data stems may be used that relate to other types of actions by customers on the advertisers web site.

The following generic format is preferably used for extended data actions tag:

`http://switch.avenuea.com/action/[action identifier]/v2  
[label 1].[data 1]...[label n].[data n]`

Each label/value pair appears in the action tag URL using the format "[label].[data]". Items in square brackets ("["", ""]") are variables that change depending on advertiser, action, and page view. Table 2 describes the constituent party of this URL.

Item	Definition
switch.avenuea.com	specifies the Avenue A action server
action	identifies the request as an action tag
action identifier	identifies the action in the Avenue A data warehouse
v2	specifies that this URL uses the second

	version of the Avenue A action format
label n	the label for an extended data item
data n	the value for an extended data item

Table 2

To conceal the content of the data included in the action URL, it can be masked as indicated in Table 3:

Type of data	Formula	Example
quantities (e.g. Number of items ordered)	2000 - quantity	4 items in order = 1996
money (e.g. total amount spent)	1000000 - (amount * 100)	\$135.99 spent = (1000000 - 13599) = 986401
item numbers	ensure that item numbers are same format, then concatenate into a single string	4 items ordered 111A, 222B, 333C, 444D = 111A222B333C444D
transaction numbers or other identifiers	no masking	12345 - YBS

Table 3

For example, if MyCompany.com's customer spent \$135.99, this amount would be masked as follows:

$$(1000000 - 13599) = 986401$$

For each action tag included in a web page by the advertiser, it is determined which extended data item to include in the action tag. This list of extended data items is referred to as the data definition for the action tag. The data definition can include any information desired by the advertiser, for example, your customer's unique identifier, transaction values and identifiers, product identifiers, and more.

The data definition assigns one-character label to each extended data item. If you are masking an extended data item as discussed below, add a "z" to the label.

For example, MyCompany.com is sending a customer identifier, and transaction amount. They create labels as shown in Table 4.

Label	Data
a	customer ID
bz	transaction amount (masked)

Table 4

Since MyCompany.com is sending the customer ID and the transaction number, their URL will be formatted as follows:

http://switch.avenuea.com/action/mycompany\_sale/v2/a.[customer\_id]/bz.[masked\_sale\_amount]

For example, if the transaction ID is A12345 and the sale amount is \$135.99, the action will be:

http://switch.avenuea.com/action/mycompany\_sale/v2/a.A12345/bz.986401

With respect to URL formatting: While the extended data items in the examples are appended in alphabetical order by tag, the order is actually not relevant. However, for each action tag, all of the extended data items must be present in order for the URL to be considered valid. If an extended data item is missing, the other data in the URL will be ignored. If the data is not formatted properly, all data will be ignored. The facility preferably monitors for missing extended data items or bad data, and will notify the advertiser that there is a problem so that it can be rectified.

While embodiments of the facility described above receive extended data from advertisers operating Word Wide Web sites, additional embodiments of the invention extend to collecting extended data from infrastructure and content providers of communication channels other than

the World Wide Web, both those used in conjunction with a general-purpose computer, and those used in conjunction with special-purpose devices, such as cellular and satellite phones, pagers, personal digital assistants, devices installed in automobiles and other vehicles, automatic teller machines, 5 televisions, and other home appliances.

Figure 2 shows a method of operating under the preferred embodiment of the invention, as discussed above, illustrated for clarity. A customer 200 (operating one of the Internet user computer systems 101-104), a merchant 202 (operating one of the Internet user computers 131, 132), and 10 an advertising service company 204 (operating the Internet advertising service computer system 140) are interconnected to transmit information as described above and summarized below.

The process begins in the generation of the merchant's web site, which normally includes numerous web pages. One or more of these 15 pages will include an action tag as noted above, which is generated by the advertising service company 204, and transmitted to the merchant in step 206 for inclusion in each desired web page. The action tags typically differ for each page, which helps to identify the page visited in data collected as noted below. As provided by the advertising service company, the action 20 tags have certain blank fields as noted above. This process generally occurs well in advance of a visit from the customer, during an initial period when the web pages are created.

The customer requests a web page in step 210. This may be by typing in the URL of the desired page, or more typically by clicking on a 25 link from another site, or from an advertisement on another site or in a promotional email or other communication. In many instances, the page is requested by navigation among the pages within the merchant's web site, such as by selecting a particular product description page from the main page, by selecting a returned result from a list generated by a search request, 30 by adding a product to a shopping cart, by requesting to check out, and by confirming an order. In typical Internet commerce sites, pages are



essentially requested by engaging in the sequential steps of shopping and placing an order.

In step 212, the merchant modifies the action tag by adding extended data of the types noted above, based on the actions taken by the customer. The completed URL is transmitted to the customer, as the rest of the requested web page is transmitted. In step 214, the customer's computer automatically transmits the URL and the customer's cookie to the advertising service company, at the address indicated by the URL. This automatic process is the natural result of the customer's web browser seeking to load all information provided at the page, by retrieving it from various sites using the URLs provided on the page.

In step 216, the advertising service company 204 receives the URL, extracts the extended data and cookie as described above, and stores the complete data set in a database record associated with the transaction. Also in response to receipt of the URL, the advertising service company transmits the one pixel transparent gif image to the customer in step 220 to fulfill the customer's browser's request. When the merchant has provided all web page data in step 222, the download is complete 224. The process may continue as the customer continues browsing, or progresses through the steps of a transaction.

In a given transaction, the advertising service company can learn when the user made the request, in response to which advertising campaign, how long the customer waited for each page to load (comparing the time of the request and the time of the receipt of the action tag URL), how long was spent at each page, which sequence of pages were visited, which items were selected for the shopping cart listing potential purchases, which items were purchased, preferred characteristics of the ordered items (e.g., size, color, style, format), the customer number assigned by the merchant, and any of the other items discussed above or of interest to a merchant.

For different transactions on different days, the collection of the user's cookie can provide a link between different purchasing events, providing useful marketing information about users in general, and about that customer in particular (assuming that the customer opted to provide  
5 contact information to receive future promotions). The advertising service company generates a report 226 based on the data, discerning trends and patterns that assist in developing effective advertising campaigns, targeted marketing, and improved web site design.

While the above is discussed in terms of preferred and  
10 alternative embodiments, the invention is not intended to be so limited.

## CLAIMS

1           1. A method of recording data about a commercial  
2 transaction with a merchant comprising:  
3           transmitting a URL containing selected data and empty fields  
4 to a merchant;  
5           receiving the URL with additional extended data filling the  
6 fields; and  
7           storing the extended data.

1           2. The method of claim 1 including a merchant receiving  
2 the transmitted URL, and adding the extended data includes the merchant  
3 adding information about a customer's web browsing activity and  
4 transmitting the URL and extended data to the customer.

1           3. The method of claim 2 including the customer  
2 transmitting the URL with extended data.

1           4. The method of claim 3 including receiving a cookie  
2 from the customer.

1           5. The method of claim 1 including a merchant receiving  
2 the URL and including it on a web page.

1           6. The method of claim 5 including the merchant receiving  
2 a commercial communication from a customer, and including in the  
3 extended data elements of the commercial communication.

1                   7.    The method of claim 1 including transmitting a  
2 transparent image file in response to receiving the URL.

1                   8.    The method of claim 1 wherein the extended data  
2 includes at least one data element selected from a set of possible data  
3 elements including:

4                   a customer ID code.  
5                   a time of the request.  
6                   a session identifier.  
7                   a selected information set pertaining to a commercial  
8 transaction.  
9                   an identifier of goods.  
10                  a purchase quantity.  
11                  a purchase price.  
12                  a product size.  
13                  a product color.  
14                  a product style, and  
15                  a customer cookie.

1                   9.    The method of claim 1 including encoding the extended  
2 data such that confidentiality is enhanced.

1                   10.   A system for recording data about a commercial  
2 transaction comprising:  
3                   a merchant generating a web page including a URL;  
4                   a customer visiting the web page;  
5                   the merchant adding extended data to the URL based on the  
6 customer visiting the web page;  
7                   the customer transmitting the URL and extended data to an  
8 agency; and

9 the agency recording the extended data.

1 11. The system of claim 10 including the agency  
2 transmitting the URL to the merchant.

1 12. The system of claim 10 wherein the URL is included in  
2 conjunction with an action tag.

1 13. The system of claim 10 wherein the merchant adding  
2 extended data includes data about a commercial transaction between the  
3 merchant and the customer.

1 14. The system of claim 10 wherein the customer  
2 transmitting the URL includes transmitting a cookie.

1 15. The system of claim 10 wherein the extended data  
2 includes at least one data element selected from a set of possible data  
3 elements including:

4 a customer ID code.

5 a time of the request.

6 a session identifier.

7 a selected information set pertaining to a commercial  
8 transaction.

9 an identifier of goods.

10 a purchase quantity.

11 a purchase price.

12 a product size.

13 a product color.

14 a product style, and

15 a customer cookie.

1           16. The method of claim 10 including encoding the  
2     extended data such that confidentiality is enhanced.

1           17. A facility for recording data about a commercial  
2     transaction with a merchant comprising:

3                 an agency computer system operable for generating a URL  
4     containing selected data and empty fields:

5                 a merchant computer system connected to the agency computer  
6     system:

7                 the merchant computer system including data collection means  
8     for collecting transactional data about a commercial transaction with a  
9     customer:

10                the merchant computer system including updating means for  
11    adding the transactional data to the URL to generate a complete URL:

12                the merchant computer system including transmission means  
13    transmitting the complete URL to the customer; and

14                the agency computer system including recording means for  
15    receiving from the customer and storing the extended data.

1           18. The facility of claim 17 wherein the agency computer  
2     system includes means for storing a cookie received from the customer.

1           19. The facility of claim 17 wherein the extended data  
2     includes at least one data element selected from a set of possible data  
3     elements including:

4                 a customer ID code.

5                 a time of the request.

6                 a session identifier.

7                 a selected information set pertaining to a commercial  
8     transaction.

9 an identifier of goods,  
10 a purchase quantity,  
11 a purchase price,  
12 a product size,  
13 a product color,  
14 a product style, and  
15 a customer cookie.

1 20. The facility of claim 17 wherein the agency computer  
2 system includes means for transmitting a report to the merchant based on the  
3 collected data.

1/2

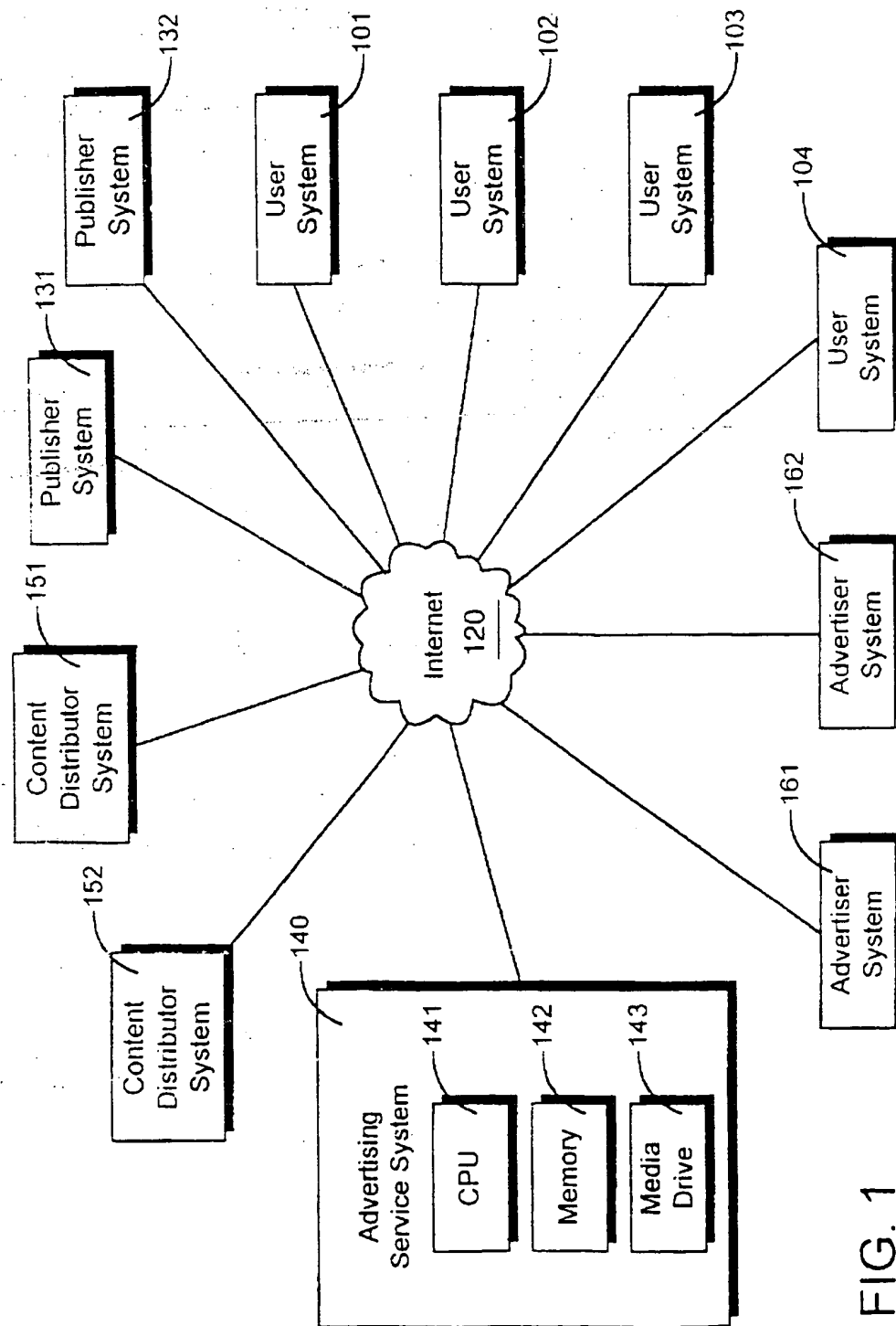


FIG. 1



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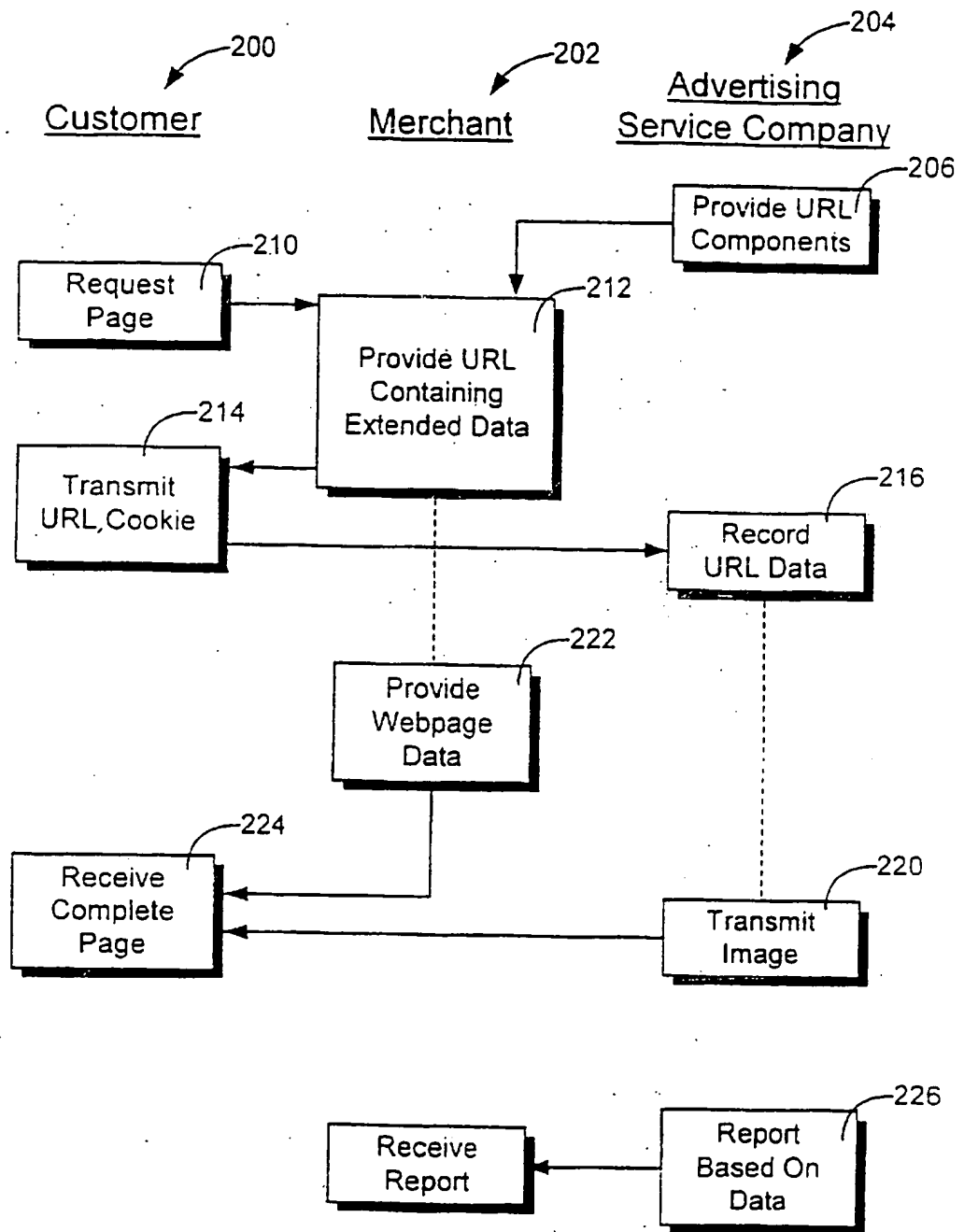


FIG. 2

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